# **Section A6 Alternative 6, Metals Recycling**

#### Nonferrous

as the latest factor keeping scrap nickel and stainless steel prices low. Analysts at Bear Stearns, New York, released a report predicting nickel will bounce back in 1998 to as high as \$2.75 per pound. As of mid-April, nickel was trading in the \$2.50 per pound range. Even the \$2.75 figure is well below the \$3.19 per pound pricing averaged in 1997 and the \$3.78 reached in March of 1997.

### ■ NICKEL SCRAP CONSUMPTION UP DRAMATICALLY IN '97

More than 10,000 additional metric tons of scrap nickel and nickel-alloyed material was consumed in the U.S. in 1997 compared to the year before. Nickel found in ferrous scrap made up the entire increase, according to the U.S. Geological Survey, as slightly less nonferrous nickel was consumed in 1997. The trend appeared to be continuing at year's end, with steel mills consuming 7% more primary and secondary nickel in December of 1997 than they did the month before.

# CKE

#### U.S. Secondary Nickel Cons (metric tons, nickel content)

Ferrou	s Scrap	Nonferrous Scrap	Total Scrap
1996	43,400	9,980	53,400
1997	53,500	9,920	63,600

Source: U.S. Geological Survey

#### **PRECIOUS METALS**

#### **M** GOLD PRICING SPURS DEMAND

Perhaps demonstrating that age-old laws of economics still remain in effect as the year 2000 approaches, demand for gold increased sharply in 1997 as its price plunged.

Worldwide consumption of gold rose 16 percent in 1997, according to Gold Fields Mineral Services (GFMS), London. The 1997 increase in demand—in terms of volume—came primarily from jewelry makers in India, as well as gold jewelry makers in the Middle East and Europe.

#### HEWLETT-PACKARD OPENS METAL SEPARATION PLANT

Hewlett-Packard Co., Palo Alto, Calif., and Noranda Inc., Toronto, have opened a metal separation plant designed to sort and recover recyclable materials from computers and other electronic hardware. Hewlett-Packard and the Micro Metallics subsidiary of Noranda say the new facility is unique in both its "size and ability to process a diverse stream of electronic hardware and other materials." Potentially recyclable materials commonly found within the computer hardware to be processed include gold and silver as well as copper, steel and plastic polymers.

### Hawco's 4-Tine Hydraulic Scrap Grapple

### **Totally Redesigned with These Features and Improvements**



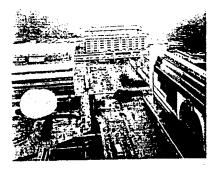
- Extreme Duty Hydraulic Cylinders
- Extra Heavy Duty, High Torque Capacity Rotation Motor
- New, Heavy Duty Rotation Swivel
- Larger, Oversized Pins and Bushings
- Redesigned Box for Easier Access to Internal Components
- Code 61, 4-Bolt Split Flange Hose Connectors on Cylinders

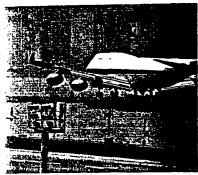


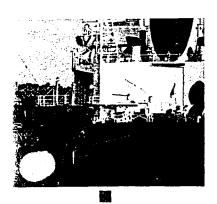
HAWCO MANUFACTURING CO., L.L.C. • P.O. Box 216 • Slaughter, LA 70777

(888) GO-HAWCO • (504) 654-8222 • (504) 654-7014 FAX • sales@hawcomfg.com • www.hawcomfg.com

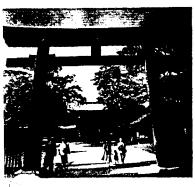














### The Tung Tai Group-Your Gateway to Asia

In 1972, when the Tung Tai Group began as an exporter of non-ferrous metals to the Far East, the scrap market in China was in its infancy. Since then, the pioneering spirit of Joseph Chen, president and founder, has built Tung Tai into one of the leading processors of non-ferrous metals in Asia.

As a true pioneer in this ever-changing industry, the Tung Tai Group has the knowledge and experience to provide you with a stable market and a competitive edge. When you choose Tung Tai, you are getting the expertise you need to be successful in Asia and globally. From our numerous plant locations in China, we ensure that you have access to the best available outlets for your products, resulting in the highest return possible. The Tung Tai Group is truly your key to the Asian markets, as well as markets worldwide. We are your international connection.

We have been here from this industry's beginning, we are growing stronger in the market each day and we will be here as this everexpanding industry unfolds into the future. We, at Tung Tai, invite you to join us as we unlock your gateway to Asia.

### Guan Xi... The Art of Relationships

Tung Tai's very foundation is built on our customer relationships. We have built these strong, long-term partnerships all over the world by providing our customers with a consistent outlet for their products and service that is superior.

International business dealings can be very complex in nature and we understand this very well. That is why, when you work with Tung Tai, we work to be at your service at all times. We are committed to creating and maintaining mutually beneficial partnerships with our customers worldwide for the purpose of continued joint success.

At Tung Tai, the customer comes first. Whether you are in our time zone or not, we are here to serve you as quickly and efficiently as possible. We are your international partner in the scrap and recy-

### Environmentally Sound

The earth is a precious resource that should be handled with care and treated with great respect. At the Tung Tai Group, we conduct our business each day with this in mind. We believe that our industry contributes to the preservation of our planet and its natural resources by finding new uses for, and giving additional life to, products and materials that would otherwise go to waste and clog our landfills.

Over twenty-five years of experience has taught us many things and, among those lessons learned, one stands out as being very important. Treasure the earth and all of its natural resources because the future depends on the decisions we make today. With this in mind, as a responsible recycler and non-ferrous metals processor, we work closely with all international, federal, state and local authorities to meet and exceed their regulatory guidelines for our industry. We see these agencies as partners in our mission to further preserve our precious planet and we welcome their input, always keeping in mind that today's decisions are the building blocks of the future.

By constantly looking for new, environmentally sound ways to fully utilize all of the material we handle and participating in all relative regulatory activities, we believe that we are making a positive difference in our planet's future.

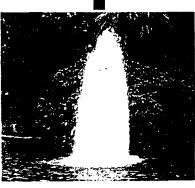
#### Our Environmental Mission Statement

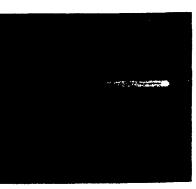
It is the mission of the Tung Tai Group to renew products and material that others find outdated, obsolete or of no practical use or value. We vow to utilize all material we process to the fullest extent, thus attaining its highest possible use and further contributing to the preservation of our planet's precious resources for future generations.



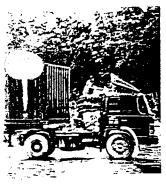








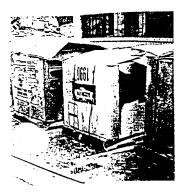












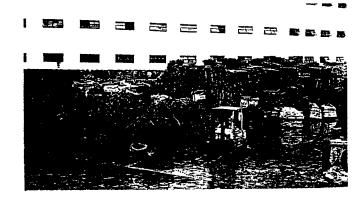


## The Tung Tai Process

With a workforce of over 800 strong, Tung Tai is dedicated to processing all material in the most efficient, expedient and economical way possible. We strive daily to maintain and improve our processes by streamlining our systems, upgrading our equipment and finding new ways to more fully utilize material. Our highly trained staff works as a cohesive team, resulting in the highest recovery available for our customers.

Containers are brought into our yards and prepared for inspection. All containers are then weighed on our yard scales prior to unloading. Each material type is weighed separately and recorded promptly and accurately. And all tare weights are recorded before and after each unloading.

We process all material sent to our facilities thoroughly, using the most efficient recycling methods available. These methods include extensive, meticulous hand labor, as well as state-of-the-art machinery. All of our processes, whether manual or automated, are geared to procure the highest recyclable content possible. These processes all contribute to Tung Tai's zero-landfill policy and work to prevent the loss of any valuable material during the recycling process. All in all, our processes are in place to provide one thing - your satisfaction.



Our containers are unloaded at the appropriate docks according to material type. To ensure completely accurate separation of material types, we employ both manual and machine separation methods.

### Attaining the Highest Use Possible

From the moment we receive your material, our primary goal is to find the best use for that material. Not only does this approach result in the least amount of waste, making us a very efficient recycler, it also guarantees that you always receive the highest return for your material.

At Tung Tai, every load of material goes through many stages of manual and machine processing to ready it for its final form. These processes include a thorough segregation and cleaning of all material in preparation for the smelting procedure. Our final products are then shipped to our customers in a variety of industries.

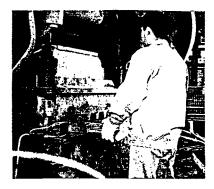
Each of our facilities has many different processing methods. Each and every one of these processes has been professionally engineered for maximum safety and efficiency and our skilled staff monitors each one on a regular basis.

When you choose Tung Tai, our team of professionals worldwide are all working to recover the highest value for you by finding the best possible use for all of your material. At Tung Tai, our efficiency and expedience improves your profits.



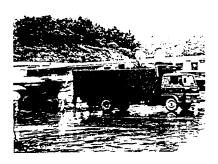
Safety and efficiency are primary concerns at each of our facilities. We work hard to procure the very best material available and produce finished products of the highest quality around.



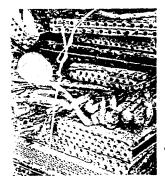






















### Product Requirements

From the beginning, Tung Tai has always sought to purchase a wide range of products from a variety of sources, both locally and worldwide. This has enabled us to become a company with global purchasing power. From North America to Europe and Asia, our ability to purchase and process the entire spectrum of non-ferrous metal material is unparalleled. If you can think of a product, we can process it. From copper wire to aluminum extrusion, from automobile radiators and carburetors to circuit boards and computer wire, we are your best processing and recycling source.

Here are some examples of what we process:



Barley/No. 1 Wire Candy/No. 1 Tubing Berry/No. 1 Wire Birch/Cliff/No.2 Light Copper Copper Nodules

Auto Radiators
Al/Cu Radiators
Honey/Yellow Brass
Red Brass
Modine Tubes
Refinery Brass

#### Aluminum

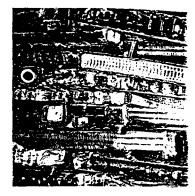
Nickel Disks
Disk Drives
MLC Aluminum
Gas Meters
Aluminum Dross

EC/Aluminum Wire 6063 Extrusion/Profiles Taint/Tabor Cast Aluminum Aluminum Pistons

#### Wire

CATV Cable
Computer Wire
Telephone Wire
Figure Eight Wire
Class 53 Wire
Jelly Cable
Stalpeth Cable
Jumper Wire
Alum./Steel BX Cable
Tech Cable

Lead Cable
Power Cable
Submarine Cable
No.1 Insulated
No.2 Insulated
House Wire
Alum. Insulated Cable
Alpeth Cable











Telephone Scrap Telephone Relay Power Supply Microphones Keyboards IBM Boards

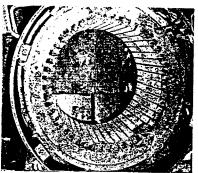
Computer Scrap
Monitors
Electronic Breakage
Computer Wire
Circuit Boards
Monitor Boards



Transformers
Electric Meters
Carburetors
Switchgear
Lead Scrap
Mixed Die Cast

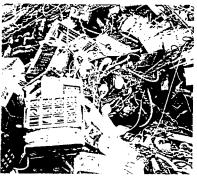
Copper Bearing
Electric Motors
Armatures
Stators
Ballasts
Copper Clad Boards



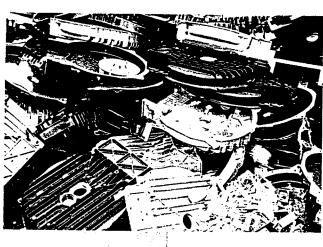


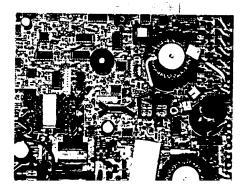












Aluminum, copper,
wire, computer and
electric components, if
you want it recycled,
we can do it.

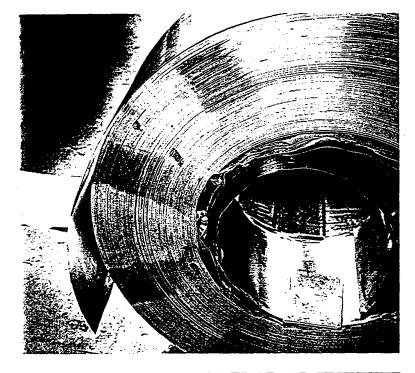




### I The Tung Tai Metal Products

At Tung Tai, we offer you an extensive array of high quality finished metal goods. These products are produced by our skilled personnel in our Metal Products Division. The top quality of these finished products is always guaranteed by the simple fact that we supply our own scrap, therefore, we know each product's composition. And because we use only the highest quality material available, we are

confident that you will be completely satisfied with the finished product, no matter what type of industry it is for. And we have the capabilities to provide custom specifications and work hard to meet even the tightest schedule you may have.



The take great pride

thering metal

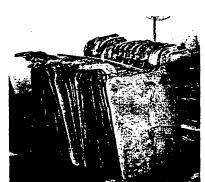
the structs of the

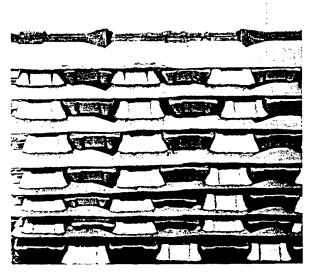
nighest quality

available in the

market.









### Corporate Program

Offering Solutions to a Wide Range of Industries

With today's global economy, intense competition and ever-evolving technology, many companies face the interesting dilemma of what to do with surplus or outdated electronic material. Whether it is actual company inventory or a simple case of updating your corporation's electronic hardware, the question remains the same, how do you dispose of it?

The Tung Tai Group has been providing businesses with a solution to this problem for many years. With our headquarters located near many important Bay Area centers of industry, including the high-tech hub of Silicon Valley, we have had many opportunities to assist the asset recovery divisions of some of the world's leading corporations. And we can process material according to virtually any specific instructions you may require.

Our many years of experience with this issue have enabled us to develop

many specialized programs for our customers, including our End of Life program. Through this program, you receive certificates of destruction and all of the necessary paperwork to enable you to follow the material from the supplier to the ports to its final destination, one of our processing plants. We work with you to ensure complete elimination of your material as a viable product in its original form.



#### **TUNG TAI TRADING CORPORATION**

1325 HOWARD AVENUE, SUITE 611 BURLINGAME, CA 94010 U.S.A. TEL: (650) 573-5705 FAX: (650) 685-7200

#### CERTIFICATE OF DESTRUCTION

SUPPLIER: XYZ Company 100 Main Street Anytown, USA 123456

This document certifies that all material included in the shipment listed below has been completely dismantled and destroyed based on the standards provided by the supplier listed above.

Shipment Number: 123 Container Number XXX

Description	Quantity	
XXXX	XXXX Units ZZZZ Units	

Furthermore, we certify that the material listed will not be resold in whole or in part prior to or after its destruction in any manner other than that which recovers base metals and materials for recycling and/or smelting purposes.

Processing to recover metals by various steps (including crushing, grinding, screening, melting and dissolving) completely destroys the product and all materials are disposed of by environmentally sound methods and in accordance with all applicable environmental standards.

Our Certificate		
Destruction is issued with	Date:	Signed:

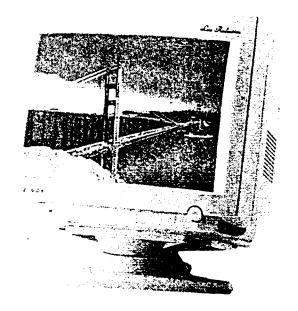
every shipment to provide a

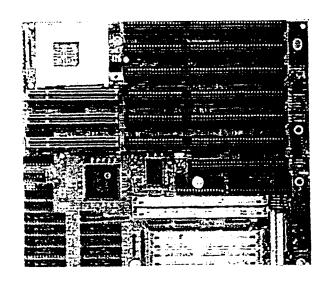


### Tung Tai Computer Division

The Tung Tai Computer Division can handle all of your computer-related material. Because of our comprehensive marketing capabilities, we can offer you the highest possible return on these items. And our international sales and marketing network enables us to tap into markets in need of virtually every type of product you can imagine. Our expertise in marketing our products worldwide ensures that we will find an outlet for your material, no matter what it is. And we

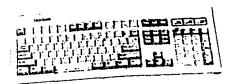
will work with you on an outright or joint venture basis, depending upon your particular preference. At Tung Tai, all of our resources are here to serve you.





Marketing computer
components is a
dynamic and
expanding portion of
our business. Call us
whenever you are
considering
eliminating any of
your corporation's
equipment.







### No. 14

Tung-Tai Group

(Metals Recycling)

•

### No. 15

### **ATG Hazardous Lighting Waste**

**Recycling Facility** 

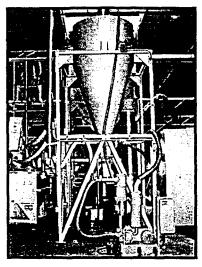
(Mercury Lamps)

### ATG INC.

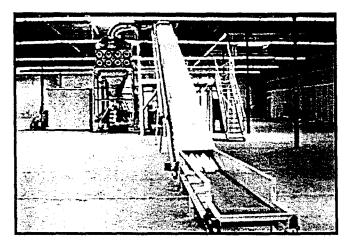
### HAZARDOUS LIGHTING WASTE RECYCLING FACILITY FREMONT, CALIFORNIA

#### **OVERVIEW**

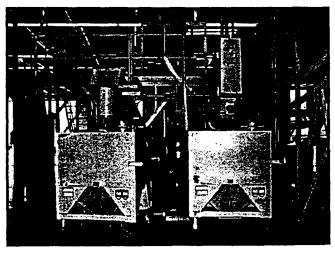
he Hazardous Lighting Waste Recycling Facility recycles fluorescent tubes and brokers PCB-ballasts and non-PCB ballasts. The system at the corporate owned Fremont Facility treats the fluorescent tubes by separating its primary components of glass, mercury, and aluminum for beneficial reuse. Because of past use of cadmium as an activator in the phosphorus powder, the powder is a California hazardous waste and is disposed of in a Class I landfill. The primary governing body for processes of spent lighting fixtures is the California Department of Toxic Substances Control (DTSC). The current Consent Order was issued on May 15, 1996. Spent fluorescent tubes and High Intensity Discharge (HID) lamps are regulated by the DTSC because they contain mercury. These spent tubes and HID lamps contain concentrations of mercury (persistent and bioaccumulative substance) that exceed the Total Threshold Limit Concentration (TTLC) of 20 mg/kg. PCB-ballasts are considered hazardous in California (Appendix X, Chapter 11, 22 CCR). Ballasts manufactured after January 1, 1978 do not contain PCB's and are labeled as such by the manufacturer. ATG has its own hazardous waste transporter permits for its trucks and uses a bill of lading or manifest as appropriate. ATG does not accept fluorescent tubes that are crushed but may accept lamps that were broken in the course of normal handling and transportation. ATG's Hazardous Lighting Waste Recycling Facility has environmental impairment liability in the amount of \$1,000,000 per occurrence and \$2,000,000 aggregate.



Phosphor Powder storage prior to on-site mercury retorting.



Glass conveyer system.



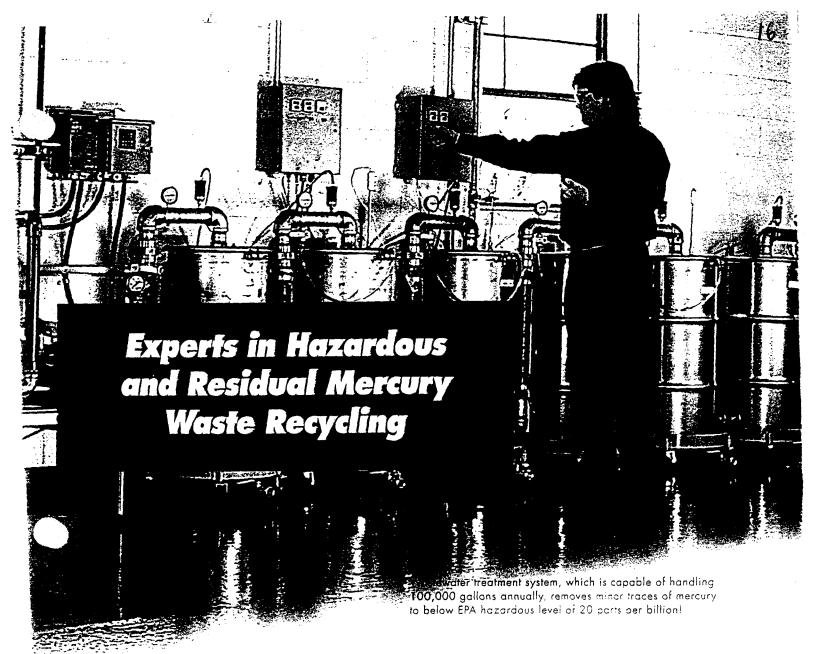
Glass and aluminum and-caps recovery system

		- , 		·	
		en e			
	·	·			
				te edge for use owner.	
·					
	,				
					_
	·				
			•		

### No. 16

### **Bethlehem Resource Recovery Division**

(Mercury Recycling)



Bethlehem Apparatus Company's Resource Recovery Division is the recognized leader in the recycling of mercury and mercury bearing waste. We specialize in providing a safe convenient and spit effective method for recycling mercury again in materials. Using the most daylanced stratest reconding members and anysical treatment systems. Bethlehem Apparatus can process a wide variety of solid and liquid mercury bearing wastes. We are also a global supplier of at meiotrain and high purity mercury.



### Responsible, Experienced and Safe

Since 1950 Beth enem Apparatus has maintained an unbiem shed environmental record. Our proprietary processed are designed so that regardless of the material being processed, no solid, liquid, or gaseous wastes are discharged. We meet on exceed EPA regulations at every step of the recovery operation. Our system of checks and balances gives you the assurance that your nazardous waste is being handled in a responsible manner. Our regulatory approvals for mentury recovery respicing intude:

- , =D\_
- CER CLA
- PAl Depri of Environment a Printection

### Bethlehem Apparatus Recycles a Wide Variety of Solid and Liquid Mercury Waste



Bethlehem Apparatus can handle more types of mercury bearing waste than any other recycler. We can process a wide variety of materials including:

#### Batteries

- Mercury batteries
- Large zinc-air or carbon-air batteries
- Alkaline dry cells
- Button cells
- Silver cells

#### Electrical Equipment

- Ignitron tubes
- Metal, glass & telephone switches
- Mercury rectifiers
- Mercury relays
- Thermocouples

#### Lamps

- Fluorescent lamps
- Quartz lamps and HID lamps
- Ultraviolet lamps

#### **Thermometers**

- Industrial thermometers
- Medical thermometers
- Barometers & manometers
- Sphygmomanometers

#### Mercury Compounds

- Mercury bromides
- Mercury chlorides
- Mercury nitrates
- And many others

#### Solids

- Activated charcoal
- Dental amalgams
- Mercury sludge
- Soil contaminated with mercury

#### Liquids

- COD solutions
- Nessleris reagent
- Mercury solutions
- Water contaminated with mercury

#### Mercury wastes from:

- Gold mining operations
- Zinc mining operations
- Chlorine caustic soda operations
- Norzink philution control process

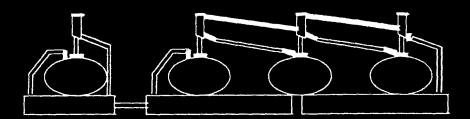


Bethlehem Apparatus operates the world's largest commercial mercury recycling facility in North America with over 100,000 sq. ft. of specialized systems and proprietary processes in continuous operation. We process over 1000 tons of mercury waste annually. We have the capacity to process from a few ounces to truckloads of 55 gallon drums efficiently and cost-effectively. Our facilities and capabilities include:

- 29 advanced programmable high vacuum retorts with over seven tons per day capacity
- 8 quadruple distillation systems
- Calomel system capable of processing over 2 tons per day
- 20,000 mercury flasks (76lb) per year capability
- 100,000 gallons per year capacity water purification system

Advanced high vacuum retorts are designed to process over 200 different types of mercury wastes

# We Buy, Distill and Sell Mercury Worldwide



Only from Bethlehem Apparatus comes the highest purity vacuum quadruple distilled mercury. We are a reliable source of supply to a wide variety of users including chlorine, caustic soda, switch, fluorescent light and dental amalgam manufacturers, research laboratories, and the process and control industries. Bethlehem Apparatus features the best in purity, packaging and service:

- Over 7 (seven) million pounds shipped
- Vacuum Quad Distilled to produce the highest purity mercury needed in crystal growth technology systems and other high purity applications
- Guaranteed & certified 99.99999% pure
- Packaged in Glass, Polyethylene and Stainless Steel containers
- Domestic and international shipping capability

Also available in 76lb flasks:

- Prime virgin mercury (99.99% pure)
- By-product mercury (99.0% pure)

76lb. DOT Approved Reusable Steel Flask

## Bethlehem Apparatus Co., Inc. RESOURCE RECOVERY DIVISION

890 Front St., P.O. Box Y Hellertown, PA 18055 USA

610-838-7034

FAX: 610-838-6333

E-mail: Bacohg@aol.com Internet: www.mercuryrecycling.com

